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(54) Title: SYSTEM AND METHOD FOR ITEM EXCHANGE

(57) Abstract:

## SYSTEM AND METHOD FOR ITEM EXCHANGE FIELD OF THE INVENTION

The present invention relates generally to systems and methods for the transfer and exchange of electronic items, such as but not limited to, electronic (e.g., digital) content, certificates, licenses, money, options, contracts, computing-power, bandwidth and/or HD (hard disk) space.

## BACKGROUND OF THE INVENTION

Virtually anything that may be represented by words, numbers, graphics, or a system of commands and instructions may be formatted into electronic digital information, herein referred to as electronic content. Television, cable, satellite transmissions, and on-line services transmitted over telephone lines, for example, compete to distribute digital information and entertainment to homes and businesses. The owners and marketers of this content include software developers, motion picture and recording companies, publishers of books, magazines, and newspapers, and information database providers. The popularization of on-line services, as well as advancements in compression algorithms (e.g., MP3) that make content files much smaller, higher speed communication lines and new computing paradigms like distributed peer-to-peer computing that provide a solution to the problem of limited bandwidth of central servers, have enabled the individual personal computer user to participate as a content provider, creator, mediator and/or distributor.

A fundamental problem for electronic content providers is extending their ability to control the use of proprietary information. Content providers often need to limit use to authorized activities and amounts. Participants in a business model involving, for example, provision of movies and advertising on optical discs may include actors, directors, script and other writers, musicians, studios, publishers, distributors, retailers, advertisers, credit card services, and content end-users. These participants need the ability to embody their range of agreements and requirements, including use limitations, into an extended agreement comprising an overall electronic business model.

Prior art systems for controlling the provision and distribution of electronic content are based on the principle of limiting the allocation, distribution and right to use the electronic content. The content end-user is constrained to purchase the content from an authorized seller or provider. This hinders the end-user's ability to obtain the content and burdens the system's capability of policing the distribution of the content and managing royalty payments.

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For example, commercial content providers are concerned with ensuring proper compensation for the use of their electronic information. Electronic digital information, for example a CD recording, may be copied relatively easily and inexpensively. Similarly, unauthorized copying and use of software programs deprives rightful owners of huge amounts of income. Content providers and distributors have devised a number of limited function rights protection mechanisms to protect their rights. Authorization passwords and protocols, license servers, "lock/unlock" distribution methods, and non-electronic contractual limitations imposed on users of shrink-wrapped software are just some examples of the prior art content protection schemes. In a commercial context, these efforts are inefficient and limited solutions. For example, some systems may encrypt the content item, mark the content item with a unique watermark and mark the player program on the users' computer with a unique mark. Upon payment of a fee, the user may play the content item for a limited number of times, or for a limited period of time and the like. However, such systems are usually complicated, not user-friendly and may be broken by hackers.

#### SUMMARY OF THE INVENTION

The present invention seeks to provide simple and effective systems and methods for the transfer and exchange of electronic items, such as but not limited to, electronic (e.g., digital) content, certificates, licenses, money, options, contracts, computing-power, communication line bandwidth, and/or HD (hard disk) space. The present invention may provide different tools and features in this regard, such as but not limited to, the transfer of micropayments between users, royalty payments to copyright holders, presentation and offers of licenses, and ratings of the users' performance, actions and authentication in the system. The invention, unlike the prior art, provides incentives and motivation to give or sell items.

The present invention may enable management of electronic items over computerized networks or on a single computer. The invention may enable users to search for electronic items, to express an offer or bid for electronic items, and to exchange electronic items that are transferable over such networks. The invention may enable optimization of the communications bandwidth used in computer networks. The system of the invention preferably promotes and gives priority to high bandwidth peers on the network. In this manner, the items are distributed faster, the load on the network is more homogeneous and bandwidth bottlenecks may be reduced or prevented. The invention may eliminate the need for expensive servers and trained personnel managing the servers.

In one embodiment of the present invention, an electronic item is auctioned for sale. A buyer who purchases the electronic item then becomes authorized to sell the electronic item to further buyers. The capability of all authorized providers to sell the electronic item to further buyers is a function of an upload capability of the provider to upload the item to a potential buyer, and of a download capability of the buyer to download the item from a potential provider. For example, a user with a large download communications bandwidth (BW) may download from several users who possess small upload BW. Conversely, a user with a large communications upload BW may upload to several users who possess small download BW.

The total downloading bandwidth of the buyers may be typically greater than the total uploading bandwidth of the sellers, so there may typically be a queue of buyers who are waiting for their turn to download. In contrast, sellers usually do not wait, and may be busy uploading items. The transfers of a certain item stop when all the users who want the particular item have it. The transfer or sale of the electronic item may typically be transacted only with the buyers with the highest bids. If the seller has a total upload bandwidth smaller than the download bandwidth of the buyer with the highest bid, a single seller or several sellers (depending upon the amount of the free BW they have), may be chosen (randomly or not) to transact with the highest bidder. If, after giving the highest bidder all the bandwidth the highest bidder may use, the seller still has available upload bandwidth, the remaining bandwidth may be used immediately with the next highest bidder. Accordingly, a large download BW may enable the user to download faster and to quickly start uploading (selling) the item. A large upload BW may enable the user to sell the item more times before the price of the item drops.

The transfer of items between sellers and buyers may be carried out by dividing the users with a minimum amount of free bandwidth into a list of buyers (L1) and a list of sellers (L2). List L1 of buyers may be sorted by the bid price (highest bid at the top of the list) and by the time of the bid (earlier time of bid appearing first on the list). List L2 of sellers may be sorted by the offer price (lowest offer first) and by the time of the offer (earlier time first).

In addition to, or instead of, sorting L1 and/or L2 by price and/or precedence, it is also possible to sort L1 and/or L2 according to the proximity of the users in the pairs, according to minimum nodes in the route between the users, or according to any other optimization criteria.

One example of proximity between users may be geographic proximity in the physical world. For example, if two users are connected to the system through a common Internet service provider (ISP), which may be determined from their IP addresses, those two users may be preferred as a potential pair as opposed to other users who are connected through different ISPs, or who are in different countries. This way of preferring pairs may make the overall system more efficient in terms of utilization of network resources.

A pair comprising a buyer and a seller may be selected from the top of the two lists L1 and L2. If either of the lists is empty or the bid price is less than the offer price, then the system may go into a waiting mode until new entries are entered into the lists. If a pair has been chosen and the prices are suitable for a transaction, then the system may commence transfer of the item between the buyer and the seller with the maximum possible bandwidth. Afterwards, the system again checks the lists to pick the next pair of buyer and seller.

If the content is copyrighted, then the system of the invention ensures that a royalty is paid to the copyright owner for each sale of the content. The royalty may be selected such that a profit from sales by a provider who is not the copyright owner has a predefined probability of being less than royalties accumulated to the copyright owner. In other words, in the long run, the copyright owner is ensured of making the most profit and other buyers, who turn into authorized content providers, will also profit. Thus, the system benefits everybody, and since the copyright owner will enjoy the most profit, the copyright owner has an incentive to allow as many purchases as possible. The incentive of the copyright owner is to beat the free systems. If his/her item is transferred in free systems, he/she gets nothing. If the copyright owner insists on too high royalties, users may try to obtain the item in a free system and the copyright owner would miss an opportunity to be rewarded.

The royalty percentage (from the sell price), royalty minimum and royalty maximum, may be determined by the copyright owner. A default, maximum royalty percentage and royalty minimum, may be fixed for items if the license creator identity is not sufficiently verified. The better the verification, authentication, rating and money balance of the user, the easier it is for him/her to create lower-than-the-maximum-percentage-royalties licenses and retrieve royalty money from the system, after the royalty money has been collected. As another example, the system may permit creation of licenses only by users who pass a certain level of verification and authentication, and/or users who deposit a certain amount of money in custody and/or users who have a minimum rating on the system. As yet another example, the system may only permit transaction for items that

have a license that was created by such authorized and recognized users. The system may present the user's rating and level of authentication to other users. In such a case, users may choose to carry out transactions only with users who have a minimum rating or a minimum level of authentication.

The present invention may integrate various features, such as but not limited to, peer-to-peer requesting, offering, exchanging, sharing, connections and transfers, a search engine, a micropayment system, copyright management, royalties payment, rating of users and items, and management and controlled reproduction of items (e.g., licenses, certificates, contracts, or collectible cards, for example).

An item stored in the system may have keywords attached thereto. In the present invention, keywords may be arranged in a Boolean expression to facilitate searching. Keywords may be typed manually or may be selected from lists. For example, a first keyword may be selected from a list of all the existing keywords. A second keyword if needed, may be selected from a list of keywords, which together with the first keyword gives a non-empty list of items. Additional keywords may be selected in a similar recursive way. Previously selected keywords may be deleted, modified or replaced by other keywords selected from other lists of keywords. Typing one or more first letters of a keyword may cause the system to display all keywords that start with those letters. The lists of keywords may display, beside an unselected keyword, a number indicating how many items would be selected if a certain keyword were to replace the selected keyword.

The present invention may enable management of royalty payments and protection of copyrights: Items in the system may be marked as being copyrighted by the copyright owners. Such marked items may be transferred in the system with a license. The license itself may be an item in the system. The license may carry information, such as but not limited to, the name of the copyright owner and what percentage of the price of the marked item should be transferred to the copyright owner. When searching for items to purchase, prospective buyers may readily see if the sought-after item is marked or not.

For example, items may be marked as being licensed for distribution. Prospective buyers may readily see with what kind of license the sought-after item is marked, and the rating of the user who is providing the item. A minimum and/or maximum price for the item may also be part of the license, together with conditional parameters, such as but not limited to, time dependencies, number of copies of the item, and the like. The creator of the license may be permitted to change the parameters manually on the license, even after the license has expired, provided that certain guide rules are followed.

A user of the system of the present invention may have a personal account in which funds may be held. Payment between two users may be transacted by subtracting the required amount from one account and adding it to another account. The payment system may support transactions with delayed payments or transactions with conditional payments. For example, while the payment is delayed or conditioned, the payment may be kept in custody by the system. The two sides of the transaction may agree in advance when the money is released and what happens if they do not agree. In case of a conflict, they may choose an arbitrator, such as from a list of very reliable users, which the system may provide. As another example, the user ratings may include the number of times the user had disagreements with other users. Users may choose to avoid transactions with anyone whose rating is under certain level, or may choose to do transactions only if they may cancel the payment without questions. The number of cancellations may also be part of the user rating.

### BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood and appreciated more fully from the following detailed description taken in conjunction with the drawings in which:

Figs. 1A and 1B are simplified flow charts of methods for content exchange in accordance with preferred embodiments of the present invention; and

Fig. 2 is a simplified illustration of a method for searching in accordance with a preferred embodiment of the present invention, and which may be used for searching for content in the method for content exchange.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference is now made to Fig. 1A, which illustrates a method for exchange of items (also referred to as content, the two terms being used interchangeably throughout) in accordance with a preferred embodiment of the present invention.

The total number of sellers who may sell the electronic item is represented as  $S$ . Initially,  $S$  may equal one, as in the case that the electronic item is originally offered for sale by the copyright owner (step 101). The total number of sellers who must pay royalties to the copyright owner is represented as  $R$ . Initially,  $R$  may equal zero, such as prior to any non-copyright owner purchasing the electronic item (step 102). As mentioned above, an electronic item marked as a copyrighted content is also referred to as a marked item. It may be noted that, in general,  $R$  equals  $S$  minus the number of copyright owners of the item. Alternatively, everyone, including the owner, may pay royalties for each transaction.

The content is then offered for sale (step 103). The offer for sale may have conditions, such as but not limited to, a minimum selling price, a minimum number of bidders (e.g., if there are less than ten bidders, no offer for sale is made), or a minimum level of rating for the bidders. Bidders may search for content to buy, such as with a searching method described hereinbelow with reference to Fig. 2 (step 104). If there are bidders, the bidders bid for the content (step 105). If there are no bidders, then the offer maker may wait until there are bids and then continue to step 105. (While the offer maker waits, the offer may remain active and the item may be found in searches.) The content provider may sell the content by uploading to the highest available bidder (step 106). In other words, the electronic item is auctioned for sale from a first provider (e.g., the copyright owner) of the content (who is authorized to sell the content), and the content is sold to a buyer who, upon purchasing and downloading the electronic item, is authorized to become a second provider of the electronic item. Accordingly, after the sale, the total number of sellers who may sell the electronic item  $S = S+1$  (step 107).

If the content is a marked item, and the seller is not the copyright owner, then a royalty is paid to the copyright owner (step 108) and the total number of sellers who must pay royalties to the copyright owner  $R = R+1$  (step 109).

The content may then further be offered for sale and the process continues until no more bids are made for the content. However, a buyer who has bought the item may not be able to sell the item unless that buyer has sufficient bandwidth to upload the item to other bidders. If that buyer (who has now become an authorized content provider) does not have sufficient bandwidth to upload the electronic item to other users, or if that buyer does not satisfy certain demands (such as sufficiently high rating or a minimum number of bidders), then that buyer is not currently available as a seller of the content (step 110). This is explained further in detail hereinbelow with reference to Tables 1-4.

Reference is now made to Fig. 1B, which illustrates a method for content exchange in accordance with another preferred embodiment of the present invention.

Copyrights owners may make items available in the system of the invention (step 151). Other users may search, find, and make offers or bids for the items (step 152). If there is a bid or offer for an item (step 153), then the system may use the following procedure. First, a list L1 may be created of all the senders and all the receivers that have a minimum amount of free bandwidth (step 154). From the list L1, a second list L2 may be created of all the pairs of senders and receivers that comply with mutual rating and price criteria (step 155). If L2 is not empty, then a pair "P1" may be chosen from list L2 with the



best price. If more than one user has the same price, then the first bidder may be chosen. The transfer may then commence with the highest possible bandwidth between the users of this pair (step 156). Finally, the amount of free bandwidth for the two users of the pair P1 may be updated accordingly (step 157).

Reference is now made to Tables 1-4, which provide an illustrative example of methods of the invention. The example shown in Tables 1-4 is only for purposes of explaining one example of the invention, but it is emphasized that the present invention is not in any way limited by this example.

A copyright owner may initially offer the electronic item for 15 money units. Buyers 1, 2, 3, ...n may post bids of varying amounts, such as 14.90, 14.75, 14.63, ...14.25. Each person has a capability of downloading and uploading (such as a rate expressed in bits per second). Table 1 shows the initial state. For simplistic purposes, the download and upload rates of each user in this example are identical. Of course, in reality, they may differ as mentioned hereinabove.

It is noted that the owner may state a minimum price. The transactions may be typically carried out at higher prices. The price may be determined in the competition process between the buyers. There is no upper limit to the price (unless the owner wants to make such limit, which is usually unreasonable). If the demand for the item is very high, and many users want it, the initial price may be very high. The owner may start to sell only after a minimum number of users make their bids.

Table 1

Person	Download/Upload Rate	Offer	Bid	No. of Sales	Profit	Royalties
Owner	350	15	-	-	-	-
Buyer 1	320	-	14.90	-	-	-
Buyer 2	750	-	14.75	-	-	-
Buyer 3	100	-	14.63	-	-	-
Buyer n	300	-	14.25	-	-	-

The copyright owner may sell the electronic item to the highest bidder, in this example, buyer 1. Table 2 shows the result of the sale.

Table 2

Person	Download/Upload Rate	Offer	Bid	No. of Sales	Profit	Royalties
Owner	350	15	-	1	14.90	-
Buyer 1	320	-	14.90	-	-	-
Buyer 2	750	-	14.75	-	-	-
Buyer 3	100	-	14.63	-	-	-
Buyer n	300	-	14.25	-	-	-

The copyright owner and buyer 1 are now both authorized to sell the content and they both compete for selling the content to the rest of the buyers. If both the copyright owner and buyer 1 have available bandwidth for uploading, then they both may have the same chance of being selected as the seller of the content by a prospective buyer.

Suppose that buyer 2 chooses to buy the content from buyer 1. Buyer 2 pays buyer 1 14.75 for the content. If the royalty has been set at 20% of the transaction, 2.95 ( $20\% \times 14.75$ ) will be allocated to the copyright owner and deducted from buyer 2's profits. Table 3 shows the result of such a transaction.

Table 3

Person	Download/Upload Rate	Offer	Bid	No. of Sales	Profit	Royalties
Owner	350	15	-	1	$14.90 + 2.95 = 17.85$	2.95
Buyer 1	320	-	14.90	1	11.80	-
Buyer 2	750	-	14.75	-	-	-
Buyer 3	100	-	14.63	-	-	-
Buyer n	300	-	14.25	-	-	-

Now the copyright owner, buyer 1 and buyer 2 are authorized to sell the content and they all compete for selling the content to the rest of the buyers. As mentioned hereinabove, a buyer who has bought the content may not be able to sell the content unless that buyer has sufficiently available bandwidth. Note that buyer 2 has a download/upload capability of more than double the capability of either the copyright owner or buyer 1. It is therefore theoretically possible for buyer 2 to complete two transactions of sales of the content and still compete for third transaction with the copyright owner and buyer 1.

Accordingly, a probability of one of the content providers being selected by a further buyer for selling the content increases as the download/upload capability of that provider increases.

If indeed buyer 2 were to be selected as the seller by buyer 3 and buyer n, then Table 4 shows the result of such transactions and royalty payments to the copyright owner.

Table 4

Person	Download /Upload Rate	Offer	Bid	No. of Sales	Profit	Royalties
Owner	350	15	-	1	$17.85+8.73=26.58$	$2.95+2.93+2.85=8.73$
Buyer 1	320	-	14.90	1	11.80	-
Buyer 2	750	-	14.75	2	$14.63+14.25-2.93-2.85=23.10$	-
Buyer 3	100	-	14.63	-	-	-
Buyer n	300	-	14.25	-	-	-

The royalty may be a function of the download/upload capability or bandwidth of the content providers. Preferably the royalty is selected such that a profit from a predefined amount of sales by a provider who is not the copyright owner has a predefined probability of being less than accumulated profit to the copyright owner. In the above example, the royalty has been selected as 20% and it is seen that after a total of 4 sales of the content, the accumulated profit of the copyright owner is 26.58 which is greater than the profit of buyer 2 (23.10) and of buyer 1 (11.80). If the royalty had been 10%, then after 4 such sales buyer 2 would have more profit (25.99) than the copyright owner (19.27), but the probability of buyer 2 having more profit than the copyright owner after 100 sales could be, for example, less than 1% because of the accumulated royalties from the other buyers. Thus, the method and system of the invention may be attractive to the copyright owner, and the copyright owner may have an incentive to allow as many purchases as possible.

The system may provide and display information about the download/upload capability of the content providers to the buyers, as well as other information, such as but not limited to, information regarding if the content is copyrighted by a copyright owner and royalty information. Buyers may select sellers (content providers) based on this information or randomly or in any other manner.

It is noted that the system of the invention may be automated. In other words, the system may automatically find the best bid, make the transaction, pay for the transaction and collect money for the transaction. Suitable algorithms may be implemented for automatic operation of the system. In addition, the system may automatically maximize the utilization of available bandwidth on computer networks, thereby preventing bottlenecks and maximizing the distribution speed. The system may optimally share and utilize available computing power, available hard disk space and any other shareable resource of the network peers. The system may ensure that a peer who most needs the item (and is prepared to pay the highest price for it) will get first priority at downloading the item from the peer who is the most currently available provider.

The system may also be used with virtual money. For example, instead of collecting revenues, an organization may use the system to investigate how peers contribute to the network resources or how they consume the network resources.

Another embodiment of the invention may include the presenting names of items in the system before making the items themselves available. This may enable users who want the item to enter their requests in advance. The moment the item is available, the transfers may start immediately according to the request list.

In another embodiment of the invention, if a user wants an item, which cannot be found in the system, the user may enter a request for the item and may offer a price to another user who will make the item available. The methods and system of the invention may be considered symmetric: a user may choose to auction an item for sale or reverse auction an item to buy.

The system may have an automatic mode in which the system works to maximize the user profits from its items and peer resources. In this mode, the system may work unattended, downloading and uploading the items that may make the highest profit for the user. The calculations used by the system in automatic mode may be based on various factors, such as but not limited to, the upload and download BW, money balance and limitations such as maximum price for new items that the user may fix in advance.

The system may work with or without a central server. If there is a central server, it may store and manage any pertinent information, such as but not limited to, a list of the users with their money balance and other parameters, a list of the items, a list of the licenses, a list of the bids, a list of the offers and a list of the transfers that are currently taking place.

There may or may not be a minimum bandwidth size for a single transfer.

Users may deposit money into their account in the system from their credit card, from their bank account, from their telephone bill and/or from any other billing system that the user prefers. There may be a minimum and/or maximum amount of money for a single deposit. Users may also withdraw money from their account in the system, to the same sources mentioned and with similar limitations. There may also be a special percentage charged for each withdrawal, which may go to the system operators.

Users may transfer money between their personal accounts in the system. In this way, users may also donate money from their accounts to charity and other organizations that may be invited to become users in the system.

Reference is now made to Fig. 2, which illustrates a method for searching in accordance with a preferred embodiment of the present invention, and which may be used for searching for content in the method for content exchange described hereinabove.

In order to facilitate a user searching for an item, the system may display keywords for the user to select. Each keyword is eventually linked to one or more items, and every item may have keywords attached thereto. Keywords may be typed manually or may be selected from lists. For example, in Fig. 2, a first list of keywords is displayed. Next to each keyword an amount of items that would be found if that keyword were selected is displayed. For example, if the word "the" were selected, 122739 items would comprise the keyword "the". After selecting a keyword from the first list, the user may then combine that keyword in any Boolean expression (e.g., AND, OR, NOTAND, etc.) with a second keyword from a second list of keywords. For example, the display may show that "the" AND "hand" would provide 4991 items. Additional keywords may be selected in a similar recursive way from further lists. Previously selected keywords may be deleted, modified or replaced by other keywords selected from other lists of keywords. Typing one or more first letters of a keyword may cause the system to display all keywords that start with those letters. The lists of keywords may display, beside an unselected keyword, a number indicating how many items would be selected if a certain keyword were to replace the selected keyword.

In accordance with another embodiment of the invention, a "meta-keyword" may be implemented. For example, a meta-keyword may be a general topic, e.g., the topic of singers and the list of keywords would then be names of singers. A user may be able to choose from a predetermined list of meta-keywords, and be provided with a list of keywords associated with that meta-keyword.

In accordance with another embodiment of the invention, the search may include the ability to select numeric keywords. For example, the user may be able to choose all items with a price above 45 money units, or in a range of prices like 5-45. The user may be able to sort the list of available keywords according to various parameters, e.g., according to how many users also chose the particular keyword, possibly indicating popularity of the item.

The method of searching of the invention may significantly facilitate the art of searching. The user does not need to know many keywords and may easily select a keyword from a large list provided by the system. The user quickly "homes in" on the desired end-result by seeing how many entries and other possible parameters match the selected combination of keywords, which information is not found or displayed in the prior art.

It will be appreciated by person skilled in the art that the present invention is not limited by what has been particularly shown and described herein above. Rather the scope of the present invention is defined only by the claims that follow:

14  
CLAIMS

What is claimed is:

1. A method for exchange of items, the method comprising:  
    auctioning an electronic item for sale from a first provider of said electronic item who is authorized to sell said electronic item; and  
    selling said electronic item by uploading to a buyer who, upon purchasing and downloading said electronic item, is authorized to become a second provider of said electronic item, wherein a capability of said providers to sell said electronic item to further buyers is a function of at least one of a download capability and an upload capability of said providers.
2. The method according to claim 1 wherein a sale of said electronic item by one of said providers is transactable only if that provider has a communication bandwidth sufficient to upload said electronic item.
3. The method according to claim 1 wherein a sale of said electronic item by one of said providers is transactable only if a prospective buyer has a communication bandwidth sufficient to download said electronic item.
4. The method according to claim 1 wherein a sale of said electronic item by one of said providers is transactable only if a condition is met, said condition comprising at least one of a minimum selling price, a minimum number of bidders, a minimum number of offer makers, a minimum level of rating of a user.
5. The method according to claim 4 wherein said level of rating is a function of a business behavior of said user with other users.
6. The method according to claim 1 and further comprising automatically finding the best bid for said item, making a transaction between a buyer and a provider, paying for said transaction and collecting money for said transaction.
7. The method according to claim 1 wherein a probability of one of said providers being selected by a further buyer for selling said electronic item increases as the upload capability of that provider increases.
8. The method according to claim 1 and further comprising paying a royalty to a copyright owner of said electronic item upon selling said electronic item.
9. The method according to claim 8 wherein said royalty is a function of at least one of the upload capability of providers and the download capability of buyers.

10. The method according to claim 8 wherein said royalty is selected such that a profit from a predefined amount of sales by a provider who is not said copyright owner has a predefined probability of being less than accumulated profit to said copyright owner.
11. The method according to claim 1 and further comprising providing information about the upload capability of said providers to buyers.
12. The method according to claim 1 and further comprising providing information about the download capability of buyers to said providers.
13. The method according to claim 1 and further comprising providing information to buyers if said electronic item is copyrighted by a copyright owner.
14. The method according to claim 1 and further comprising providing a license with said electronic item, said license authorizing a further transaction with said electronic item.
15. The method according to claim 1 and further comprising providing royalty information to buyers.
16. The method according to claim 1 and further comprising collecting payment from a buyer to a provider of said electronic item.
17. The method according to claim 1 and further comprising collecting a royalty payment from a provider of said electronic item to a copyright owner of said electronic item.
18. The method according to claim 1 and further comprising presenting names of electronic items before making said items available for transfer between users.
19. The method according to claim 18 and further comprising entering a request in advance for an electronic item and transferring said item when said item becomes available.
20. The method according to claim 18 and further comprising entering a request in advance for an electronic item and offering a price to another user who makes said item available.
21. The method according to claim 1 and further comprising automatically downloading and uploading electronic items in accordance with criteria that improve profits of a user.
22. The method according to claim 1 and further comprising handling information related to said electronic item with a central server.
23. The method according to claim 1 and further comprising providing user accounts for transfer of money from one account to another account.



24. The method according to claim 1 and further comprising permitting a user to choose between auctioning an item for sale and reverse auctioning an item to buy.
25. The method according to claim 1 wherein selling said electronic item comprises:  
dividing users with a minimum amount of free bandwidth into a list of buyers (L1) and a list of sellers (L2);  
selecting a pair comprising a buyer from L1 and a seller from L2 in accordance with a selection criterion; and  
transferring an electronic item between the selected buyer and the selected seller.
26. The method according to claim 25 wherein said selection criterion comprises at least one of an availability of bandwidth, a bid price, and an offer price.
27. The method according to claim 25 and further comprising sorting said buyers and sellers of lists L1 and L2 in accordance with a sorting criterion.
28. The method according to claim 27 wherein said sorting criterion comprises at least one of a bid price, an offer price, time of offering, time of bidding, and proximity of the users in a plurality of the pairs.
29. The method according to claim 1 and further comprising searching for said electronic item prior to purchasing said electronic item.
30. The method according to claim 29 wherein said searching comprises:  
displaying a plurality of lists of keywords and an amount of items that would be found if a keyword from one of said lists were combined with a keyword from another of said lists.
31. The method according to claim 30 and further comprising displaying, for each of said keywords in at least one of said lists, an amount of items that would be found if that keyword were selected.
32. The method according to claim 30 wherein said keywords are combinable in a Boolean expression.
33. The method according to claim 30 and further comprising displaying an amount of items that would be found if a keyword from one of said lists were replaced by another keyword and said other keyword combined with a keyword from another of said lists.
34. A method for searching comprising:  
displaying a plurality of lists of keywords and an amount of items that would be found if a keyword from one of said lists were combined with a keyword from another of said lists.

35. The method according to claim 34 and further comprising displaying, for each of said keywords in at least one of said lists, an amount of items that would be found if that keyword were selected.
36. The method according to claim 34 wherein said keywords are combinable in a Boolean expression.
37. The method according to claim 34 and further comprising displaying an amount of items that would be found if a keyword from one of said lists were replaced by another keyword and said other keyword combined with a keyword from another of said lists.

1/3

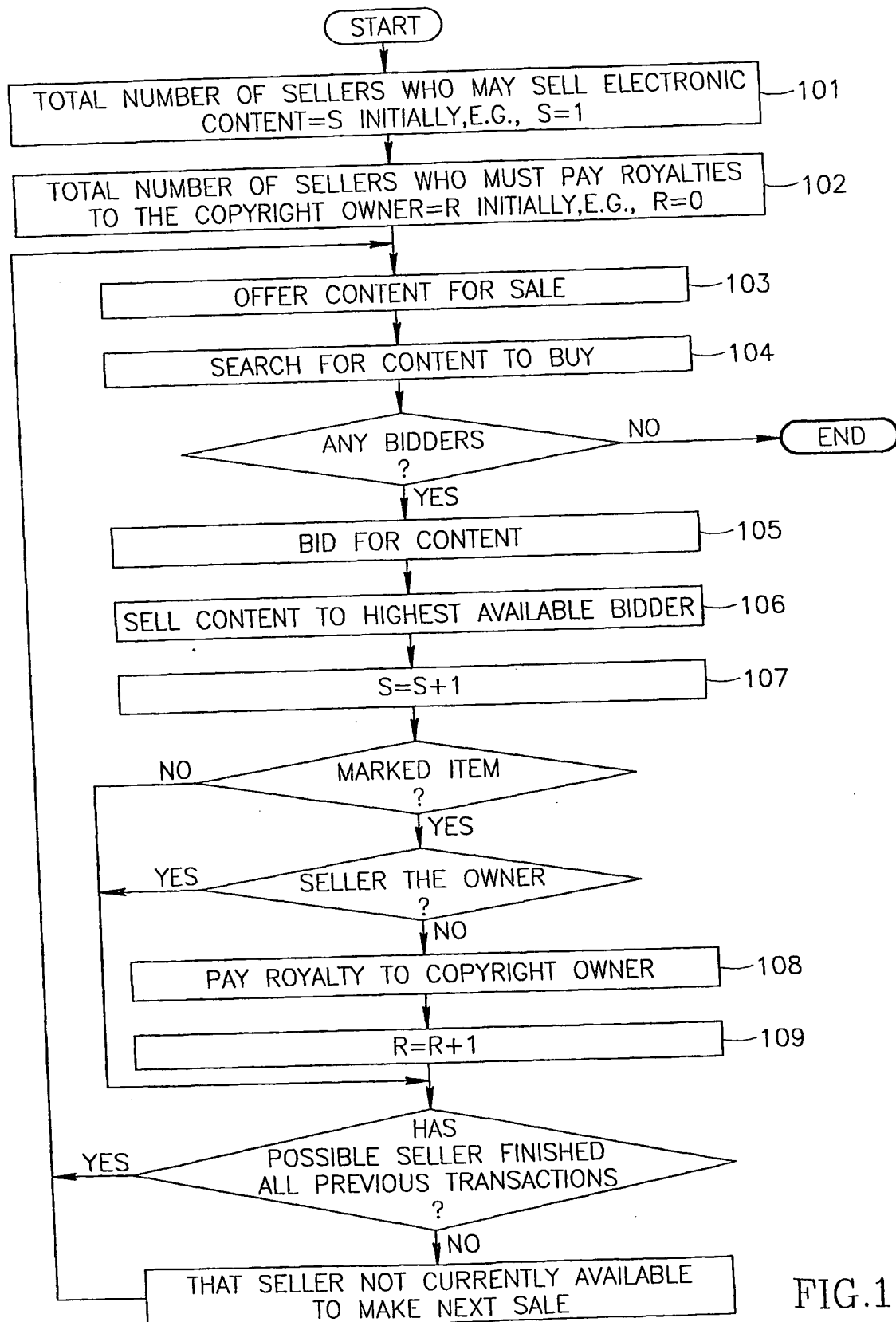


FIG.1A

2/3

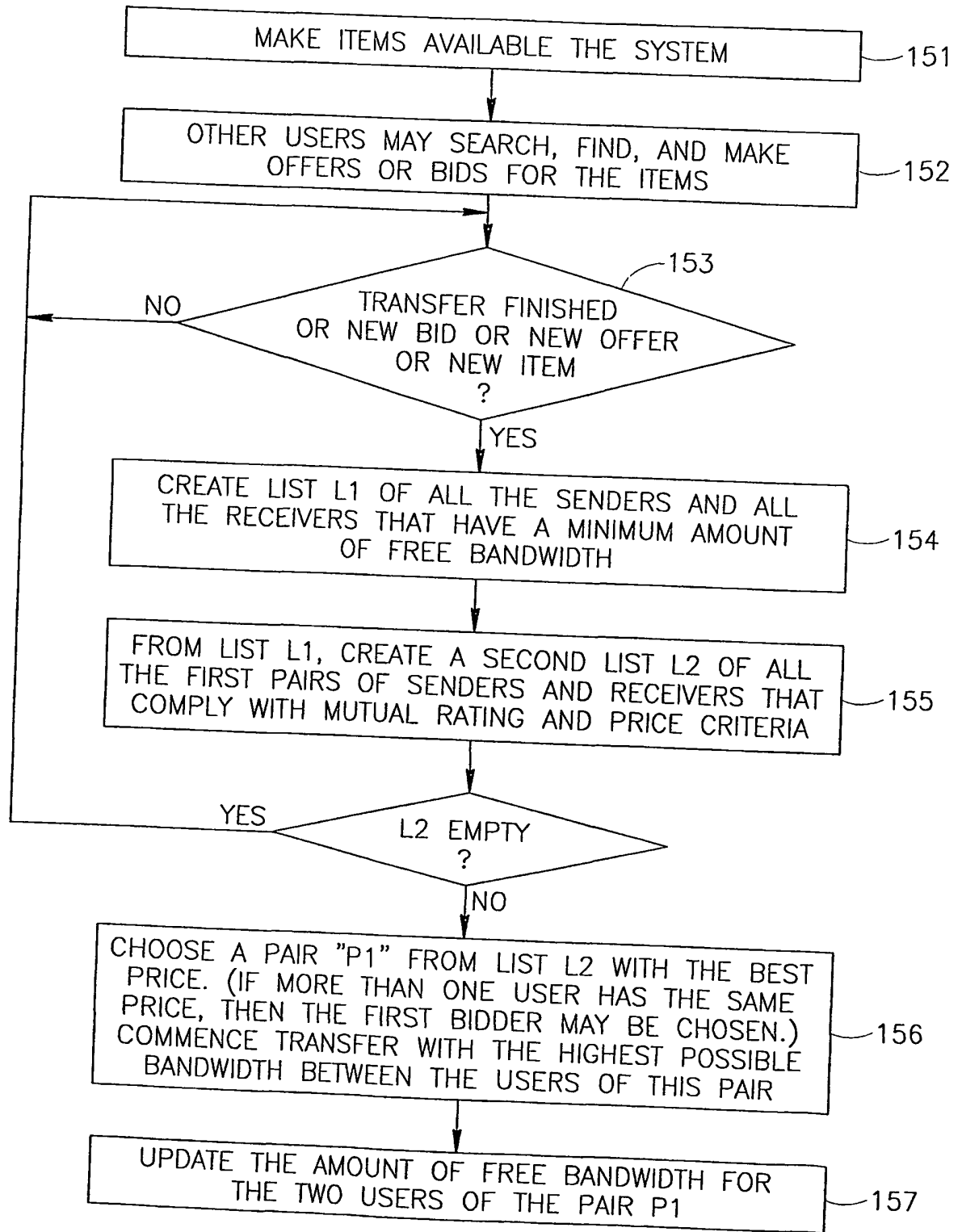


FIG.1B

3/3

FIRST KEYWORD	ENTRIES	SECOND KEYWORD	ENTRIES COMBINED WITH KEYWORD
THE	122739	FOOT	5709
BIG	49185	HAND	4991
OF	103855	MOUTH	4613
HOW	73123	EYE	6223

FIG.2

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DECLARATION OF NON-ESTABLISHMENT OF INTERNATIONAL SEARCH REPORT


(PCT Article 17(2)(a), Rules 13ter.1(c) and Rule 39)

Applicant's or agent's file reference <b>1078MOB-PCT</b>	IMPORTANT DECLARATION	Date of mailing(day/month/year) <b>20/06/2002</b>
International application No. <b>PCT/IL 02/ 00216</b>	International filing date(day/month/year) <b>19/03/2002</b>	(Earliest) Priority date(day/month/year) <b>20/03/2001</b>
International Patent Classification (IPC) or both national classification and IPC <b>G06F17/60</b>		
Applicant <b>BLAU, Abraham</b>		

This International Searching Authority hereby declares, according to Article 17(2)(a), that **no international search report will be established** on the international application for the reasons indicated below

1. ☒ The subject matter of the international application relates to:
- a. ☐ scientific theories.
  - b. ☐ mathematical theories
  - c. ☐ plant varieties.
  - d. ☐ animal varieties.
  - e. ☐ essentially biological processes for the production of plants and animals, other than microbiological processes and the products of such processes.
  - f. ☒ schemes, rules or methods of doing business.
  - g. ☐ schemes, rules or methods of performing purely mental acts.
  - h. ☐ schemes, rules or methods of playing games.
  - i. ☐ methods for treatment of the human body by surgery or therapy.
  - j. ☐ methods for treatment of the animal body by surgery or therapy.
  - k. ☐ diagnostic methods practised on the human or animal body.
  - l. ☐ mere presentations of information.
  - m. ☐ computer programs for which this International Searching Authority is not equipped to search prior art.
2. ☐ The failure of the following parts of the international application to comply with prescribed requirements prevents a meaningful search from being carried out:
- ☐ the description      ☐ the claims      ☐ the drawings
3. ☐ The failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions prevents a meaningful search from being carried out:
- ☐ the written form has not been furnished or does not comply with the standard.
- ☐ the computer readable form has not been furnished or does not comply with the standard.
4. Further comments:

Name and mailing address of the International Searching Authority

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Authorized officer

**M. Rodríguez Nóvoa**

Form PCT/ISA/203 (July 1998)

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 203

The claims relate to subject matter for which no search is required according to Rule 39 PCT. Given that the claims are formulated in terms of such subject matter or merely specify commonplace features relating to its technological implementation, the search examiner could not establish any technical problem which might potentially have required an inventive step to overcome. Hence it was not possible to carry out a meaningful search into the state of the art (Art. 17(2)(a)(i) and (ii) PCT; see Guidelines Part B Chapter VIII, 1-6).

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

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(54) Title: SYSTEM AND METHOD FOR ITEM EXCHANGE

(57) Abstract:

## SYSTEM AND METHOD FOR ITEM EXCHANGE

## FIELD OF THE INVENTION

The present invention relates generally to systems and methods for the transfer and exchange of electronic items, such as but not limited to, electronic (e.g., digital) content, certificates, licenses, money, options, contracts, computing-power, bandwidth and/or HD (hard disk) space.

## BACKGROUND OF THE INVENTION

Virtually anything that may be represented by words, numbers, graphics, or a system of commands and instructions may be formatted into electronic digital information, herein referred to as electronic content. Television, cable, satellite transmissions, and on-line services transmitted over telephone lines, for example, compete to distribute digital information and entertainment to homes and businesses. The owners and marketers of this content include software developers, motion picture and recording companies, publishers of books, magazines, and newspapers, and information database providers. The popularization of on-line services, as well as advancements in compression algorithms (e.g., MP3) that make content files much smaller, higher speed communication lines and new computing paradigms like distributed peer-to-peer computing that provide a solution to the problem of limited bandwidth of central servers, have enabled the individual personal computer user to participate as a content provider, creator, mediator and/or distributor.

A fundamental problem for electronic content providers is extending their ability to control the use of proprietary information. Content providers often need to limit use to authorized activities and amounts. Participants in a business model involving, for example, provision of movies and advertising on optical discs may include actors, directors, script and other writers, musicians, studios, publishers, distributors, retailers, advertisers, credit card services, and content end-users. These participants need the ability to embody their range of agreements and requirements, including use limitations, into an extended agreement comprising an overall electronic business model.

Prior art systems for controlling the provision and distribution of electronic content are based on the principle of limiting the allocation, distribution and right to use the electronic content. The content end-user is constrained to purchase the content from an authorized seller or provider. This hinders the end-user's ability to obtain the content and burdens the system's capability of policing the distribution of the content and managing royalty payments.

For example, commercial content providers are concerned with ensuring proper compensation for the use of their electronic information. Electronic digital information, for example a CD recording, may be copied relatively easily and inexpensively. Similarly, unauthorized copying and use of software programs deprives rightful owners of huge amounts of income. Content providers and distributors have devised a number of limited function rights protection mechanisms to protect their rights. Authorization passwords and protocols, license servers, "lock/unlock" distribution methods, and non-electronic contractual limitations imposed on users of shrink-wrapped software are just some examples of the prior art content protection schemes. In a commercial context, these efforts are inefficient and limited solutions. For example, some systems may encrypt the content item, mark the content item with a unique watermark and mark the player program on the users' computer with a unique mark. Upon payment of a fee, the user may play the content item for a limited number of times, or for a limited period of time and the like. However, such systems are usually complicated, not user-friendly and may be broken by hackers.

#### SUMMARY OF THE INVENTION

The present invention seeks to provide simple and effective systems and methods for the transfer and exchange of electronic items, such as but not limited to, electronic (e.g., digital) content, certificates, licenses, money, options, contracts, computing-power, communication line bandwidth, and/or HD (hard disk) space. The present invention may provide different tools and features in this regard, such as but not limited to, the transfer of micropayments between users, royalty payments to copyright holders, presentation and offers of licenses, and ratings of the users' performance, actions and authentication in the system. The invention, unlike the prior art, provides incentives and motivation to give or sell items.

The present invention may enable management of electronic items over computerized networks or on a single computer. The invention may enable users to search for electronic items, to express an offer or bid for electronic items, and to exchange electronic items that are transferable over such networks. The invention may enable optimization of the communications bandwidth used in computer networks. The system of the invention preferably promotes and gives priority to high bandwidth peers on the network. In this manner, the items are distributed faster, the load on the network is more homogeneous and bandwidth bottlenecks may be reduced or prevented. The invention may eliminate the need for expensive servers and trained personnel managing the servers.

In one embodiment of the present invention, an electronic item is auctioned for sale. A buyer who purchases the electronic item then becomes authorized to sell the electronic item to further buyers. The capability of all authorized providers to sell the electronic item to further buyers is a function of an upload capability of the provider to upload the item to a potential buyer, and of a download capability of the buyer to download the item from a potential provider. For example, a user with a large download communications bandwidth (BW) may download from several users who possess small upload BW. Conversely, a user with a large communications upload BW may upload to several users who possess small download BW.

The total downloading bandwidth of the buyers may be typically greater than the total uploading bandwidth of the sellers, so there may typically be a queue of buyers who are waiting for their turn to download. In contrast, sellers usually do not wait, and may be busy uploading items. The transfers of a certain item stop when all the users who want the particular item have it. The transfer or sale of the electronic item may typically be transacted only with the buyers with the highest bids. If the seller has a total upload bandwidth smaller than the download bandwidth of the buyer with the highest bid, a single seller or several sellers (depending upon the amount of the free BW they have), may be chosen (randomly or not) to transact with the highest bidder. If, after giving the highest bidder all the bandwidth the highest bidder may use, the seller still has available upload bandwidth, the remaining bandwidth may be used immediately with the next highest bidder. Accordingly, a large download BW may enable the user to download faster and to quickly start uploading (selling) the item. A large upload BW may enable the user to sell the item more times before the price of the item drops.

The transfer of items between sellers and buyers may be carried out by dividing the users with a minimum amount of free bandwidth into a list of buyers (L1) and a list of sellers (L2). List L1 of buyers may be sorted by the bid price (highest bid at the top of the list) and by the time of the bid (earlier time of bid appearing first on the list). List L2 of sellers may be sorted by the offer price (lowest offer first) and by the time of the offer (earlier time first).

In addition to, or instead of, sorting L1 and/or L2 by price and/or precedence, it is also possible to sort L1 and/or L2 according to the proximity of the users in the pairs, according to minimum nodes in the route between the users, or according to any other optimization criteria.

One example of proximity between users may be geographic proximity in the physical world. For example, if two users are connected to the system through a common Internet service provider (ISP), which may be determined from their IP addresses, those two users may be preferred as a potential pair as opposed to other users who are connected through different ISPs, or who are in different countries. This way of preferring pairs may make the overall system more efficient in terms of utilization of network resources.

A pair comprising a buyer and a seller may be selected from the top of the two lists L1 and L2. If either of the lists is empty or the bid price is less than the offer price, then the system may go into a waiting mode until new entries are entered into the lists. If a pair has been chosen and the prices are suitable for a transaction, then the system may commence transfer of the item between the buyer and the seller with the maximum possible bandwidth. Afterwards, the system again checks the lists to pick the next pair of buyer and seller.

If the content is copyrighted, then the system of the invention ensures that a royalty is paid to the copyright owner for each sale of the content. The royalty may be selected such that a profit from sales by a provider who is not the copyright owner has a predefined probability of being less than royalties accumulated to the copyright owner. In other words, in the long run, the copyright owner is ensured of making the most profit and other buyers, who turn into authorized content providers, will also profit. Thus, the system benefits everybody, and since the copyright owner will enjoy the most profit, the copyright owner has an incentive to allow as many purchases as possible. The incentive of the copyright owner is to beat the free systems. If his/her item is transferred in free systems, he/she gets nothing. If the copyright owner insists on too high royalties, users may try to obtain the item in a free system and the copyright owner would miss an opportunity to be rewarded.

The royalty percentage (from the sell price), royalty minimum and royalty maximum, may be determined by the copyright owner. A default, maximum royalty percentage and royalty minimum, may be fixed for items if the license creator identity is not sufficiently verified. The better the verification, authentication, rating and money balance of the user, the easier it is for him/her to create lower-than-the-maximum-percentage-royalties licenses and retrieve royalty money from the system, after the royalty money has been collected. As another example, the system may permit creation of licenses only by users who pass a certain level of verification and authentication, and/or users who deposit a certain amount of money in custody and/or users who have a minimum rating on the system. As yet another example, the system may only permit transaction for items that

have a license that was created by such authorized and recognized users. The system may present the user's rating and level of authentication to other users. In such a case, users may choose to carry out transactions only with users who have a minimum rating or a minimum level of authentication.

The present invention may integrate various features, such as but not limited to, peer-to-peer requesting, offering, exchanging, sharing, connections and transfers, a search engine, a micropayment system, copyright management, royalties payment, rating of users and items, and management and controlled reproduction of items (e.g., licenses, certificates, contracts, or collectible cards, for example).

An item stored in the system may have keywords attached thereto. In the present invention, keywords may be arranged in a Boolean expression to facilitate searching. Keywords may be typed manually or may be selected from lists. For example, a first keyword may be selected from a list of all the existing keywords. A second keyword if needed, may be selected from a list of keywords, which together with the first keyword gives a non-empty list of items. Additional keywords may be selected in a similar recursive way. Previously selected keywords may be deleted, modified or replaced by other keywords selected from other lists of keywords. Typing one or more first letters of a keyword may cause the system to display all keywords that start with those letters. The lists of keywords may display, beside an unselected keyword, a number indicating how many items would be selected if a certain keyword were to replace the selected keyword.

The present invention may enable management of royalty payments and protection of copyrights: Items in the system may be marked as being copyrighted by the copyright owners. Such marked items may be transferred in the system with a license. The license itself may be an item in the system. The license may carry information, such as but not limited to, the name of the copyright owner and what percentage of the price of the marked item should be transferred to the copyright owner. When searching for items to purchase, prospective buyers may readily see if the sought-after item is marked or not.

For example, items may be marked as being licensed for distribution. Prospective buyers may readily see with what kind of license the sought-after item is marked, and the rating of the user who is providing the item. A minimum and/or maximum price for the item may also be part of the license, together with conditional parameters, such as but not limited to, time dependencies, number of copies of the item, and the like. The creator of the license may be permitted to change the parameters manually on the license, even after the license has expired, provided that certain guide rules are followed.

A user of the system of the present invention may have a personal account in which funds may be held. Payment between two users may be transacted by subtracting the required amount from one account and adding it to another account. The payment system may support transactions with delayed payments or transactions with conditional payments. For example, while the payment is delayed or conditioned, the payment may be kept in custody by the system. The two sides of the transaction may agree in advance when the money is released and what happens if they do not agree. In case of a conflict, they may choose an arbitrator, such as from a list of very reliable users, which the system may provide. As another example, the user ratings may include the number of times the user had disagreements with other users. Users may choose to avoid transactions with anyone whose rating is under certain level, or may choose to do transactions only if they may cancel the payment without questions. The number of cancellations may also be part of the user rating.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood and appreciated more fully from the following detailed description taken in conjunction with the drawings in which:

Figs. 1A and 1B are simplified flow charts of methods for content exchange in accordance with preferred embodiments of the present invention; and

Fig. 2 is a simplified illustration of a method for searching in accordance with a preferred embodiment of the present invention, and which may be used for searching for content in the method for content exchange.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference is now made to Fig. 1A, which illustrates a method for exchange of items (also referred to as content, the two terms being used interchangeably throughout) in accordance with a preferred embodiment of the present invention.

The total number of sellers who may sell the electronic item is represented as S. Initially, S may equal one, as in the case that the electronic item is originally offered for sale by the copyright owner (step 101). The total number of sellers who must pay royalties to the copyright owner is represented as R. Initially, R may equal zero, such as prior to any non-copyright owner purchasing the electronic item (step 102). As mentioned above, an electronic item marked as a copyrighted content is also referred to as a marked item. It may be noted that, in general, R equals S minus the number of copyright owners of the item. Alternatively, everyone, including the owner, may pay royalties for each transaction.

The content is then offered for sale (step 103). The offer for sale may have conditions, such as but not limited to, a minimum selling price, a minimum number of bidders (e.g., if there are less than ten bidders, no offer for sale is made), or a minimum level of rating for the bidders. Bidders may search for content to buy, such as with a searching method described hereinbelow with reference to Fig. 2 (step 104). If there are bidders, the bidders bid for the content (step 105). If there are no bidders, then the offer maker may wait until there are bids and then continue to step 105. (While the offer maker waits, the offer may remain active and the item may be found in searches.) The content provider may sell the content by uploading to the highest available bidder (step 106). In other words, the electronic item is auctioned for sale from a first provider (e.g., the copyright owner) of the content (who is authorized to sell the content), and the content is sold to a buyer who, upon purchasing and downloading the electronic item, is authorized to become a second provider of the electronic item. Accordingly, after the sale, the total number of sellers who may sell the electronic item  $S = S+1$  (step 107).

If the content is a marked item, and the seller is not the copyright owner, then a royalty is paid to the copyright owner (step 108) and the total number of sellers who must pay royalties to the copyright owner  $R = R+1$  (step 109).

The content may then further be offered for sale and the process continues until no more bids are made for the content. However, a buyer who has bought the item may not be able to sell the item unless that buyer has sufficient bandwidth to upload the item to other bidders. If that buyer (who has now become an authorized content provider) does not have sufficient bandwidth to upload the electronic item to other users, or if that buyer does not satisfy certain demands (such as sufficiently high rating or a minimum number of bidders), then that buyer is not currently available as a seller of the content (step 110). This is explained further in detail hereinbelow with reference to Tables 1-4.

Reference is now made to Fig. 1B, which illustrates a method for content exchange in accordance with another preferred embodiment of the present invention.

Copyrights owners may make items available in the system of the invention (step 151). Other users may search, find, and make offers or bids for the items (step 152). If there is a bid or offer for an item (step 153), then the system may use the following procedure. First, a list L1 may be created of all the senders and all the receivers that have a minimum amount of free bandwidth (step 154). From the list L1, a second list L2 may be created of all the pairs of senders and receivers that comply with mutual rating and price criteria (step 155). If L2 is not empty, then a pair "P1" may be chosen from list L2 with the



Reference is now made to Tables 1-4, which provide an illustrative example of methods of the invention. The example shown in Tables 1-4 is only for purposes of explaining one example of the invention, but it is emphasized that the present invention is not in any way limited by this example.

It is noted that the owner may state a minimum price. The transactions may be typically carried out at higher prices. The price may be determined in the competition process between the buyers. There is no upper limit to the price (unless the owner wants to make such limit, which is usually unreasonable). If the demand for the item is very high, and many users want it, the initial price may be very high. The owner may start to sell only after a minimum number of users make their bids.

Person	Download/Upload Rate	Offer	Bid	No. of Sales	Profit	Royalties
Owner	350	15	-	-	-	-
Buyer 1	320	-	14.90	-	-	-
Buyer 2	750	-	14.75	-	-	-
Buyer 3	100	-	14.63	-	-	-
Buyer n	300	-	14.25	-	-	-

**RECTIFIED SHEET (RULE 91)**

Table 2

Person	Download/Upload Rate	Offer	Bid	No. of Sales	Profit	Royalties
Owner	350	15	-	1	14.90	-
Buyer 1	320	-	14.90	-	-	-
Buyer 2	750	-	14.75	-	-	-
Buyer 3	100	-	14.63	-	-	-
Buyer n	300	-	14.25	-	-	-

The copyright owner and buyer 1 are now both authorized to sell the content and they both compete for selling the content to the rest of the buyers. If both the copyright owner and buyer 1 have available bandwidth for uploading, then they both may have the same chance of being selected as the seller of the content by a prospective buyer.

Suppose that buyer 2 chooses to buy the content from buyer 1. Buyer 2 pays buyer 1 14.75 for the content. If the royalty has been set at 20% of the transaction, 2.95 (20% x 14.75) will be allocated to the copyright owner and deducted from buyer 2's profits. Table 3 shows the result of such a transaction.

Table 3

Person	Download/Upload Rate	Offer	Bid	No. of Sales	Profit	Royalties
Owner	350	15	-	1	14.90+2.95=17.85	2.95
Buyer 1	320	-	14.90	1	11.80	-
Buyer 2	750	-	14.75	-	-	-
Buyer 3	100	-	14.63	-	-	-
Buyer n	300	-	14.25	-	-	-

Now the copyright owner, buyer 1 and buyer 2 are authorized to sell the content and they all compete for selling the content to the rest of the buyers. As mentioned hereinabove, a buyer who has bought the content may not be able to sell the content unless that buyer has sufficiently available bandwidth. Note that buyer 2 has a download/upload capability of more than double the capability of either the copyright owner or buyer 1. It is therefore theoretically possible for buyer 2 to complete two transactions of sales of the content and still compete for third transaction with the copyright owner and buyer 1.

Accordingly, a probability of one of the content providers being selected by a further buyer for selling the content increases as the download/upload capability of that provider increases.

If indeed buyer 2 were to be selected as the seller by buyer 3 and buyer n, then Table 4 shows the result of such transactions and royalty payments to the copyright owner.

Table 4

Person	Download /Upload Rate	Offer	Bid	No. of Sales	Profit	Royalties
Owner	350	15	-	1	$17.85+8.73=26.58$	$2.95+2.93+2.85=8.73$
Buyer 1	320	-	14.90	1	11.80	-
Buyer 2	750	-	14.75	2	$14.63+14.25-2.93-2.85=23.10$	-
Buyer 3	100	-	14.63	-	-	-
Buyer n	300	-	14.25	-	-	-

The royalty may be a function of the download/upload capability or bandwidth of the content providers. Preferably the royalty is selected such that a profit from a predefined amount of sales by a provider who is not the copyright owner has a predefined probability of being less than accumulated profit to the copyright owner. In the above example, the royalty has been selected as 20% and it is seen that after a total of 4 sales of the content, the accumulated profit of the copyright owner is 26.58 which is greater than the profit of buyer 2 (23.10) and of buyer 1 (11.80). If the royalty had been 10%, then after 4 such sales buyer 2 would have more profit (25.99) than the copyright owner (19.27), but the probability of buyer 2 having more profit than the copyright owner after 100 sales could be, for example, less than 1% because of the accumulated royalties from the other buyers. Thus, the method and system of the invention may be attractive to the copyright owner, and the copyright owner may have an incentive to allow as many purchases as possible.

The system may provide and display information about the download/upload capability of the content providers to the buyers, as well as other information, such as but not limited to, information regarding if the content is copyrighted by a copyright owner and royalty information. Buyers may select sellers (content providers) based on this information or randomly or in any other manner.

It is noted that the system of the invention may be automated. In other words, the system may automatically find the best bid, make the transaction, pay for the transaction and collect money for the transaction. Suitable algorithms may be implemented for automatic operation of the system. In addition, the system may automatically maximize the utilization of available bandwidth on computer networks, thereby preventing bottlenecks and maximizing the distribution speed. The system may optimally share and utilize available computing power, available hard disk space and any other shareable resource of the network peers. The system may ensure that a peer who most needs the item (and is prepared to pay the highest price for it) will get first priority at downloading the item from the peer who is the most currently available provider.

The system may also be used with virtual money. For example, instead of collecting revenues, an organization may use the system to investigate how peers contribute to the network resources or how they consume the network resources.

Another embodiment of the invention may include the presenting names of items in the system before making the items themselves available. This may enable users who want the item to enter their requests in advance. The moment the item is available, the transfers may start immediately according to the request list.

In another embodiment of the invention, if a user wants an item, which cannot be found in the system, the user may enter a request for the item and may offer a price to another user who will make the item available. The methods and system of the invention may be considered symmetric: a user may choose to auction an item for sale or reverse auction an item to buy.

The system may have an automatic mode in which the system works to maximize the user profits from its items and peer resources. In this mode, the system may work unattended, downloading and uploading the items that may make the highest profit for the user. The calculations used by the system in automatic mode may be based on various factors, such as but not limited to, the upload and download BW, money balance and limitations such as maximum price for new items that the user may fix in advance.

The system may work with or without a central server. If there is a central server, it may store and manage any pertinent information, such as but not limited to, a list of the users with their money balance and other parameters, a list of the items, a list of the licenses, a list of the bids, a list of the offers and a list of the transfers that are currently taking place.

There may or may not be a minimum bandwidth size for a single transfer.

Users may deposit money into their account in the system from their credit card, from their bank account, from their telephone bill and/or from any other billing system that the user prefers. There may be a minimum and/or maximum amount of money for a single deposit. Users may also withdraw money from their account in the system, to the same sources mentioned and with similar limitations. There may also be a special percentage charged for each withdrawal, which may go to the system operators.

Users may transfer money between their personal accounts in the system. In this way, users may also donate money from their accounts to charity and other organizations that may be invited to become users in the system.

Reference is now made to Fig. 2, which illustrates a method for searching in accordance with a preferred embodiment of the present invention, and which may be used for searching for content in the method for content exchange described hereinabove.

In order to facilitate a user searching for an item, the system may display keywords for the user to select. Each keyword is eventually linked to one or more items, and every item may have keywords attached thereto. Keywords may be typed manually or may be selected from lists. For example, in Fig. 2, a first list of keywords is displayed. Next to each keyword an amount of items that would be found if that keyword were selected is displayed. For example, if the word "the" were selected, 122739 items would comprise the keyword "the". After selecting a keyword from the first list, the user may then combine that keyword in any Boolean expression (e.g., AND, OR, NOTAND, etc.) with a second keyword from a second list of keywords. For example, the display may show that "the" AND "hand" would provide 4991 items. Additional keywords may be selected in a similar recursive way from further lists. Previously selected keywords may be deleted, modified or replaced by other keywords selected from other lists of keywords. Typing one or more first letters of a keyword may cause the system to display all keywords that start with those letters. The lists of keywords may display, beside an unselected keyword, a number indicating how many items would be selected if a certain keyword were to replace the selected keyword.

In accordance with another embodiment of the invention, a "meta-keyword" may be implemented. For example, a meta-keyword may be a general topic, e.g., the topic of singers and the list of keywords would then be names of singers. A user may be able to choose from a predetermined list of meta-keywords, and be provided with a list of keywords associated with that meta-keyword.

In accordance with another embodiment of the invention, the search may include the ability to select numeric keywords. For example, the user may be able to choose all items with a price above 45 money units, or in a range of prices like 5-45. The user may be able to sort the list of available keywords according to various parameters, e.g., according to how many users also chose the particular keyword, possibly indicating popularity of the item.

The method of searching of the invention may significantly facilitate the art of searching. The user does not need to know many keywords and may easily select a keyword from a large list provided by the system. The user quickly "homes in" on the desired end-result by seeing how many entries and other possible parameters match the selected combination of keywords, which information is not found or displayed in the prior art.

It will be appreciated by person skilled in the art that the present invention is not limited by what has been particularly shown and described herein above. Rather the scope of the present invention is defined only by the claims that follow:

14  
CLAIMS

What is claimed is:

1. A method for exchange of items, the method comprising:  
    auctioning an electronic item for sale from a first provider of said electronic item who is authorized to sell said electronic item; and  
    selling said electronic item by uploading to a buyer who, upon purchasing and downloading said electronic item, is authorized to become a second provider of said electronic item, wherein a capability of said providers to sell said electronic item to further buyers is a function of at least one of a download capability and an upload capability of said providers.
2. The method according to claim 1 wherein a sale of said electronic item by one of said providers is transactable only if that provider has a communication bandwidth sufficient to upload said electronic item.
3. The method according to claim 1 wherein a sale of said electronic item by one of said providers is transactable only if a prospective buyer has a communication bandwidth sufficient to download said electronic item.
4. The method according to claim 1 wherein a sale of said electronic item by one of said providers is transactable only if a condition is met, said condition comprising at least one of a minimum selling price, a minimum number of bidders, a minimum number of offer makers, a minimum level of rating of a user.
5. The method according to claim 4 wherein said level of rating is a function of a business behavior of said user with other users.
6. The method according to claim 1 and further comprising automatically finding the best bid for said item, making a transaction between a buyer and a provider, paying for said transaction and collecting money for said transaction.
7. The method according to claim 1 wherein a probability of one of said providers being selected by a further buyer for selling said electronic item increases as the upload capability of that provider increases.
8. The method according to claim 1 and further comprising paying a royalty to a copyright owner of said electronic item upon selling said electronic item.
9. The method according to claim 8 wherein said royalty is a function of at least one of the upload capability of providers and the download capability of buyers.

10. The method according to claim 8 wherein said royalty is selected such that a profit from a predefined amount of sales by a provider who is not said copyright owner has a predefined probability of being less than accumulated profit to said copyright owner.
11. The method according to claim 1 and further comprising providing information about the upload capability of said providers to buyers.
12. The method according to claim 1 and further comprising providing information about the download capability of buyers to said providers.
13. The method according to claim 1 and further comprising providing information to buyers if said electronic item is copyrighted by a copyright owner.
14. The method according to claim 1 and further comprising providing a license with said electronic item, said license authorizing a further transaction with said electronic item.
15. The method according to claim 1 and further comprising providing royalty information to buyers.
16. The method according to claim 1 and further comprising collecting payment from a buyer to a provider of said electronic item.
17. The method according to claim 1 and further comprising collecting a royalty payment from a provider of said electronic item to a copyright owner of said electronic item.
18. The method according to claim 1 and further comprising presenting names of electronic items before making said items available for transfer between users.
19. The method according to claim 18 and further comprising entering a request in advance for an electronic item and transferring said item when said item becomes available.
20. The method according to claim 18 and further comprising entering a request in advance for an electronic item and offering a price to another user who makes said item available.
21. The method according to claim 1 and further comprising automatically downloading and uploading electronic items in accordance with criteria that improve profits of a user.
22. The method according to claim 1 and further comprising handling information related to said electronic item with a central server.
23. The method according to claim 1 and further comprising providing user accounts for transfer of money from one account to another account.



24. The method according to claim 1 and further comprising permitting a user to choose between auctioning an item for sale and reverse auctioning an item to buy.

25. The method according to claim 1 wherein selling said electronic item comprises:  
dividing users with a minimum amount of free bandwidth into a list of buyers (L1) and a list of sellers (L2);

selecting a pair comprising a buyer from L1 and a seller from L2 in accordance with a selection criterion; and

transferring an electronic item between the selected buyer and the selected seller.

26. The method according to claim 25 wherein said selection criterion comprises at least one of an availability of bandwidth, a bid price, and an offer price.

27. The method according to claim 25 and further comprising sorting said buyers and sellers of lists L1 and L2 in accordance with a sorting criterion.

28. The method according to claim 27 wherein said sorting criterion comprises at least one of a bid price, an offer price, time of offering, time of bidding, and proximity of the users in a plurality of the pairs.

29. The method according to claim 1 and further comprising searching for said electronic item prior to purchasing said electronic item.

30. The method according to claim 29 wherein said searching comprises:  
displaying a plurality of lists of keywords and an amount of items that would be found if a keyword from one of said lists were combined with a keyword from another of said lists.

31. The method according to claim 30 and further comprising displaying, for each of said keywords in at least one of said lists, an amount of items that would be found if that keyword were selected.

32. The method according to claim 30 wherein said keywords are combinable in a Boolean expression.

33. The method according to claim 30 and further comprising displaying an amount of items that would be found if a keyword from one of said lists were replaced by another keyword and said other keyword combined with a keyword from another of said lists.

34. A method for searching comprising:  
displaying a plurality of lists of keywords and an amount of items that would be found if a keyword from one of said lists were combined with a keyword from another of said lists.

35. The method according to claim 34 and further comprising displaying, for each of said keywords in at least one of said lists, an amount of items that would be found if that keyword were selected.
36. The method according to claim 34 wherein said keywords are combinable in a Boolean expression.
37. The method according to claim 34 and further comprising displaying an amount of items that would be found if a keyword from one of said lists were replaced by another keyword and said other keyword combined with a keyword from another of said lists.

1/3

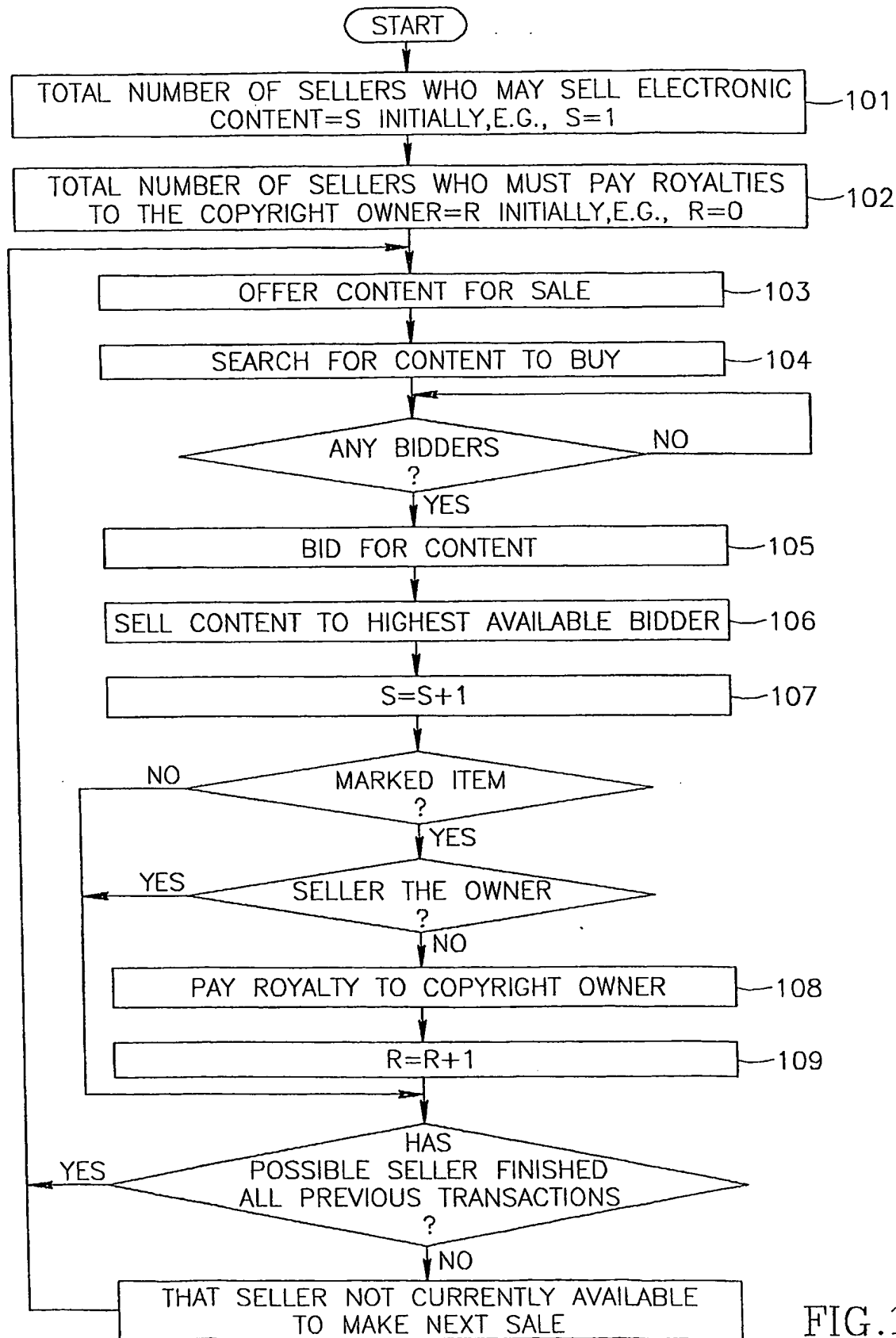


FIG.1.

2/3

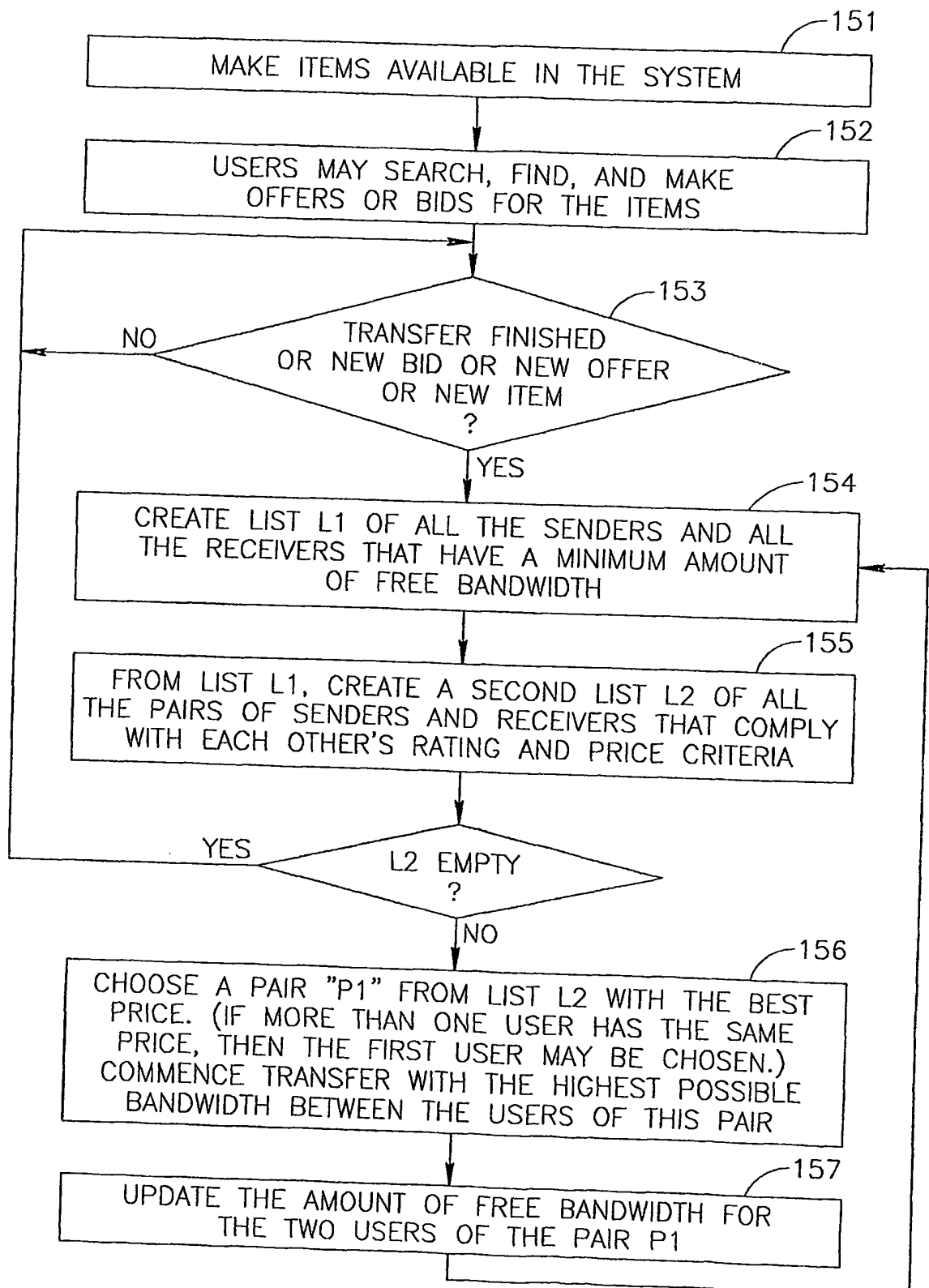


FIG.1B

3/3

FIRST KEYWORD	ENTRIES	SECOND KEYWORD	ENTRIES COMBINED WITH KEYWORD
THE	122739	FOOT	5709
BIG	49185	HAND	4991
OF	103855	MOUTH	4613
HOW	73123	EYE	6223

FIG.2

# PATENT COOPERATION TREATY

# PCT

## DECLARATION OF NON-ESTABLISHMENT OF INTERNATIONAL SEARCH REPORT (PCT Article 17(2)(a), Rules 13ter.1(c) and Rule 39)


Applicant's or agent's file reference <b>1078MOB-PCT</b>	IMPORTANT DECLARATION	Date of mailing(day/month/year) <b>20/06/2002</b>
International application No. <b>PCT/IL 02/ 00216</b>	International filing date(day/month/year) <b>19/03/2002</b>	(Earliest) Priority date(day/month/year) <b>20/03/2001</b>
International Patent Classification (IPC) or both national classification and IPC <b>G06F17/60</b>		
Applicant <b>BLAU, Abraham</b>		

This International Searching Authority hereby declares, according to Article 17(2)(a), that **no international search report will be established** on the international application for the reasons indicated below

1. ☒ The subject matter of the international application relates to:
  - a. ☐ scientific theories.
  - b. ☐ mathematical theories
  - c. ☐ plant varieties.
  - d. ☐ animal varieties.
  - e. ☐ essentially biological processes for the production of plants and animals, other than microbiological processes and the products of such processes.
  - f. ☒ schemes, rules or methods of doing business.
  - g. ☐ schemes, rules or methods of performing purely mental acts.
  - h. ☐ schemes, rules or methods of playing games.
  - i. ☐ methods for treatment of the human body by surgery or therapy.
  - j. ☐ methods for treatment of the animal body by surgery or therapy.
  - k. ☐ diagnostic methods practised on the human or animal body.
  - l. ☐ mere presentations of information.
  - m. ☐ computer programs for which this International Searching Authority is not equipped to search prior art.
2. ☐ The failure of the following parts of the international application to comply with prescribed requirements prevents a meaningful search from being carried out:
 

☐ the description
 ☐ the claims
 ☐ the drawings
3. ☐ The failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions prevents a meaningful search from being carried out:
 

☐ the written form has not been furnished or does not comply with the standard.
 ☐ the computer readable form has not been furnished or does not comply with the standard.
4. Further comments:

Name and mailing address of the International Searching Authority  

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Authorized officer

**M. Rodriguez Nóvoa**

Form PCT/ISA/203 (July 1998)

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 203

The claims relate to subject matter for which no search is required according to Rule 39 PCT. Given that the claims are formulated in terms of such subject matter or merely specify commonplace features relating to its technological implementation, the search examiner could not establish any technical problem which might potentially have required an inventive step to overcome. Hence it was not possible to carry out a meaningful search into the state of the art (Art. 17(2)(a)(i) and (ii) PCT; see Guidelines Part B Chapter VIII, 1-6).

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.5), should the problems which led to the Article 17(2) declaration be overcome.

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